UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,141	09/18/2003	Mario H. Skiadopoulos	1173-1034PUS2	7197

33883 7590 10/02/2006

Birch, Stewart, Kolasch & Birch, LLP
8110 Gatehouse Rd, Suite 500 East
P.O. Box 747
Falls Church, VA 22040-0747

EXAMINER	
BOESEN, AGNIESZKA	

ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 10/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/667,141	SKIADOPOULOS ET AL.	
	Examiner	Art Unit	
	Agnieszka Boesen	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-129,183,232,255 and 278* is/are pending in the application.

4a) Of the above claim(s) *1-66, 68-72, 77-129, 183, 232,* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *67,73-76,225 and 278* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Non-Final Office Action is responsive to the communication received July 10, 2006.

Election/Restrictions

Applicant's election with traverse of group III, claims 74, 75, 76, 255, and 278 is acknowledged. Claims 67 and 73 are linking claims of group III and will be examined together with claims 74, 75, 76, 255, and 278. Applicant argues that finding of allowability of linking claim 67 removes the requirement for restriction between groups 1-47 and finding allowability of linking claim 73 removes the requirement for restriction between groups 3-6. Applicant further argues that in this regard, it appears that the present requirement is actually for an election of species, and should the elected claims 74, 75, 76, 255, and 278 be found allowable, additional species of polynucleotides encoding HPIV2 polyhexameric recombinant genomes and antigenomes should be searched. Examiner respectfully disagrees. Because the inventions of groups 1-2, and 4-47 are patentably distinct, for the reasons made of record in the Office action of May 8, 2006, and because the different polynucleotides of groups 1-2, and 4-47 are not species of one another the allowability of linking claim 67 does not remove the requirement for restriction between groups 1-47, also the allowability of linking claim 73 does not remove the requirement for restriction between groups 3-6.

Applicant further argues that no undue burden is placed on the Examiner by searching groups 1-47 because linking claim 67 is generic to the polynucleotides encoding HPIV2 polyhexameric recombinant genome or antigenome. Examiner points out that inventions of groups 1-47 are drawn to structurally and functionally distinct polynucleotides, for example the polynucleotide of group 8 encompasses a nucleotide modification/insertion to encode a non-PIV

molecule, wherein the molecule is a cytokine; the polynucleotide of group 9 encompasses a nucleotide modification/insertion which is a T-helper epitope; and the chimera of group 24 comprises heterologous mumps virus.

The inventions of groups 1-47 are not species because they do not meet the requirements of a Markush group. The different molecules and different viruses encompassed in inventions of groups 1-47 do not meet the requirements of a Markush group because they do not meet the test set out in *In re Harnisch* which requires that the members of the group share a common utility and also have a substantial structural feature. *In re Harnisch*, 631 F.2d 716, 206, USPQ 300 (CCPA 1980); and *Ex parte Hozumi*, 3 USPQ2d 1059 (Bd. Pat. App. & Int. 1984). Broadly, unity of invention exists where compounds included within a Markush group:

(1) share a common utility, **and**

(2) share a substantial structural feature essential to that utility.

The cytokine and the T-cell epitope or the different viruses do not share common utility or a substantial structural feature essential to that utility. Thus, the Marksuh group is not proper because there is no common utility and common structural feature and restriction between the different structures is proper.

Establishing a burden requires showing one of the following (MPEP 808.02):

(1) separate classification,

(2) separate status in the art when they are classifiable together, **or**

(3) different field of search.

In the instant case the inventions of groups 1-47 have acquired different classification (see restriction requirement) and thus different field of search would be required to examine each

and every invention of groups 1-47. Thus, the restriction requirement set forth in Office action on May 8, 2006 is deemed proper and is made FINAL.

Claims 67, 73, 74, 75, 76, 255, and 278 are pending and under examination.

Priority

Acknowledgment is made for priority to a provisional application 60/412,053.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 75 and 76 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

It is apparent that HPIV3 JS cp45 is required to practice the claimed invention because they are a necessary limitation for the success of the invention as stated in the claims. As a required element it must be known and readily available to the public or obtainable by a repeatable method set forth in the specification, or otherwise readily available to the public. If it is not so obtainable or available, the enablement requirements of 35 U.S.C. § 112, first paragraph, may be satisfied by a deposit of HPIV3 JS cp45. See 37 CFR 1.802. One cannot practice the claimed invention without HPIV3 JS cp45. Therefore, access to HPIV3 JS cp45 is

required to practice the invention. The specification does not provide a repeatable method for HPIV3 JS cp45 without access to the HPIV3 JS cp45 and it does not appear to be readily available material.

In the instant case, the HPIV3 JS cp45 strain has been deposited under the terms of the Budapest Treaty with the ATCC™ of 10801 University Boulevard, Manassas, Va. 20110-2209, U.S.A. under Patent Deposit Designation PTA-2419. However, if a deposit is made under the terms of the Budapest Treaty, then an affidavit or declaration by applicants or someone associated with the patent owner who is in a position to make such assurances, or a statement by an attorney of record over his or her signature, stating that the deposit has been made under the terms of the Budapest Treaty **and** that all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the granting of a patent, would satisfy the deposit requirements. See 37 CFR 1.808.

If a deposit is not made under the terms of the Budapest Treaty, then an affidavit or declaration by applicants or someone associated with the patent owner who is in a position to make such assurances, or a statement by an attorney of record over his or her signature, stating that the deposit has been made at an acceptable depository and that the following criteria have been met:

(a) during the pendency of this application, access to the invention will be afforded to one determined by the Commissioner to be entitled thereto;

(b) all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon granting of the patent;

(c) the deposit will be maintained for a term of at least thirty (30) years and at least five (5) years after the most recent request for the furnishing of a sample of the deposited material;

(d) a viability statement in accordance with the provisions of 37 CFR 1.807; and

(e) the deposit will be replaced should it become necessary due to inviability, contamination or loss of capability to function in the manner described in the specification.

In addition the identifying information set forth in 37 CFR 1.809(d) should be added to the specification. See 37 CFR 1.803 - 37 CFR 1.809 for additional explanation of these requirements.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 67, 73, 74, 75, 255, and 278 are rejected under 35 U.S.C. 102(b) as being anticipated by Murphy *et al.* (WO 98/53078, herein, "Murphy").

The claims are drawn to an isolated, infectious, self-replicating, recombinant human parainfluenza virus type 2 (HPIV2) comprising a PIV major nucleocapsid (N) protein, a PIV nucleocapsid phosphoprotein (P), a PIV large polymerase protein (L), and a partial or complete recombinant HPIV2 genome or antigenome. The recombinant HPIV2 genome or antigenome incorporates a recombinantly-introduced attenuating mutations at one or more amino acid positions corresponding to an amino acid position of an attenuating mutation identified in a heterologous, mutant nonsegmented negative stranded RNA virus. The recombinant HPIV2 genome or antigenome incorporates one or more mutations of HPIV3 JS cp45. The claims are also drawn to an isolated polynucleotide comprising partial or complete recombinant HPIV2

genome or antigenome modified by one or more attenuating mutations and to an expression vector comprising an operably linked transcriptional promoter, a polynucleotide sequence comprising partial or complete HPIV2 genome and a transcriptional terminator.

Murphy discloses an isolated, infectious, self-replicating, recombinant parainfluenza virus comprising a PIV major nucleocapsid (N) protein, a PIV nucleocapsid phosphoprotein (P), a PIV large polymerase protein (L), and a partial or complete recombinant PIV genome or antigenome, wherein PIV genome is preferably a human PIV such as HPIV1, HPIV2 and HPIV3 (see page 7, lines 3-10, page 18, lines 22-39, and page 19, claims 1, 91, 96, 97). Murphy disclose a recombinant HPIV2 genome that incorporates a recombinantly-introduced attenuating mutations at one or more amino acid positions (see abstract, page 7, lines 33-39, page 8, lines 29-38, claims 102 and 107. Murphy discloses recombinant HPIV2 genome or antigenome incorporates one or more mutations of HPIV3 JS cp45 (see page 8, lines 20-29). Murphy discloses an isolated polynucleotide comprising partial or complete recombinant HPIV2 genome modified by one or more attenuating mutations and an expression vector comprising an operably linked transcriptional promoter, a polynucleotide sequence comprising partial or complete HPIV2 genome and a transcriptional terminator (see claims 1, 11, and 12). It is noted that HPIV2 being polyhexameric is an inherent property of HPIV2 (see spacification page 245). Thus Murphy anticipates the current claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 76 rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy *et al.* (WO 98/53078, herein, "Murphy") as applied to claims 67, 73, 74, 75, 255, and 278 above and further in view of Skiadopoulos et al. (Journal of Virology, 1999), and in view of Skiadopoulos et al. (Journal of Virology, 1998).

Claim is drawn to recombinant HPIV2 genome or antigenome incorporating one or more attenuating mutations selected from amino acid substitutions or deletions at residues 948 and/or 1566 of the HPIV2 L polymerase.

Murphy teaches a recombinant HPIV2 genome or antigenome that incorporates a recombinantly-introduced attenuating mutations in the HPIV2 polymerase gene L at one or more amino acid positions corresponding to an amino acid at residues 942, 992, and 1558 (see page 40, lines 1-38). Murphy does not teach amino acid substitutions or deletions at residues 948 and/or 1566 of the HPIV2 L polymerase. However it would have been obvious to substitute amino acid residues at positions other than positions 942, 992, and 1558, in order to identify other amino acids positions within HPIV2 polymerase L that contribute to attenuation phenotypes. One of ordinary skill in the art would have been motivated to mutate polymerase L gene of HPIV2 in order to identify amino acid positions that contribute to attenuating mutations because Skiadopoulos (Journal of Virology, 1999) teaches that attenuating mutations in the L protein are dominant over those found in F protein (see page 1380). One would have had a reasonable expectation of success to identify other amino acids within L protein other than residues 942, 992, and 1558 that contribute to attenuating mutations because Skiadopoulos (Journal of Virology, 1998) teaches reverse-genetics systems that provide powerful tools for the

characterization of attenuating mutations in viruses and make it possible to assemble a menu of attenuating mutations, are well established in the art (see page 1766). Thus the teachings of Murphy and Skiadopoulos obviate the current claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agnieszka Boesen whose telephone number is 571-272-8035. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell can be reached on 571-272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB

Agnieszka Boesen, Ph.D.
Examiner

9/27/06

Stacy B. Chen 9/28/06

STACY B. CHEN
PRIMARY EXAMINER